This is as much as I have figured out from the FCC workshop which I attended in Cambridge MA yesterday.
The average amount of bandwidth per user is increasing over time. The cost of providing a unit of bandwidth is decreasing over time, but not as fast as the need for bandwidth is increasing. Thus, in order for the numbers to work out, somebody will have to pay the extra money.

In addition to the number of bits transmitted, there is also some variation in WHERE they are transmitted. Akamai caches information closer to the people who use it so that the bits need not travel as far. The one that pays for this caching may be the ISP or the content provider (youtube) or a website owner.

The amount of bandwidth varies much among users, such that a small fraction of users may consume a large fraction of the bandwidth.

In some cases, but I cannot tell how often, the large bandwidth ISP users are those who do not pay for separate cable television and who are watching television using their internet connection rather than a separate connection. It is easy to see why broadband providers who want customers to pay separately for their television connection would want to block using the internet for that.

A popular view among some whose business interests support this is that those who use a lot of bandwidth are doing "unpleasant" things with it, such as making illegal copies of movies they do not own. I have no statistics as to how often this is true, and I suspect it is not as often as some people want to claim, which is why no numbers are offered.

Many variations were discussed in the workshop to arrange for some users to pay more than others in order to pay for the extra bandwidth. The tiers of service could be measured in amount of data transferred per month, or over a shorter time period, or the user could pay for fast service for a specific subset of applications, or the user could pay for better quality of service (faster service) for each time an application is run.

Since some people like to assume that users are stupid, an alternative would be for the ISP to "manage" the traffic on their network without getting input from the users. There are at least three problems with the ISP management approach.

First, the ISP management might preclude the possibility of an application which would otherwise be popular and a good thing, simply because they assumed things without thinking of a new possibility.

Second, the ISP's management of traffic might block competitors who go against the business interests of some non-ISP business that the ISP also owns.

Third, ISPs changing the rules, especially without warning and without revealing what they are doing, makes it more difficult for application creators to create applications which will not be broken by the ISP traffic management.

There are a lot more users of cell phones than there are users of wired line internet.

There is a perception that U.S. government (the FCC) may require "net neutrality" for wired line internet. This is sometimes interpreted as requiring that any net traffic management be application blind, as the internet initially was. This would preclude a business model where application owners pay ISPs for their traffic to be transmitted faster, such as with Akamai caching.

The situation on cell phones in America is that there is no net neutrality. For example, the iphone app store is keeping out businesses, arguably without good reason.

On cell phones, ports get blocked with no warning or announcement.

The situation with cell phones in Europe involves business arrangements which openly preclude net neutrality.

Some people say the lack of transparency and consistency impedes innovation in cell phones.

In addition to considering the number of bits transferred by a user, data compression may transmit the same information in fewer bits. An example of an innovation which is impeded by the lack of consistency and transparency on cell phones is a web browser for cell phones which makes use of data compression using an application running in the Cloud to do the compressing for each user. This compensates in some ways for lack of processing power in the cell phones.

I put a question on a card which asked why, if broadband providers are local monopolies, is local government not allowed to negotiate television content, rates, or internet traffic filtering with providers. The question was not given to the panel.

So, after all this figuring, what do I recommend that the FCC do?

Transparency.

The FCC should require that every provider of broadband, dial-up, or cell-phone connection inform the public of the exact rules by which that connection is provided - blocking of ports, preference or blocking of content (such as removing cable television channels from a cable package or prohibiting

functionally equivalent applications on a cell phone), management of network traffic, pricing tiers, preference or blocking of applications, terms of use, caching of some content to make it faster than other content, exactly what the rules are. Furthermore, any connection provider should be required to warn the public 90 days in advance of any change in the rules.

Think of it as ISO 9000 like standards requiring transparency for network connections.

Furthermore, this informing should be written so that someone who has passed a G.E.D. for high school graduation can understand it. No obscure technical jargon or legal lingo, no special senses of words or euphemisms should be allowed. The rules should be posted on the internet at a URL, accessible to common search engines, with the text able to be copied and pasted and with a static URL available so that blogs that comment upon the rules can link to the rules.

Finally, if a customer has signed a contract including an internet connection and/or cell-phone service, any change in the rules after the contract is signed gives the customer the right to terminate the contract without penalty. As a specific example, if a cell phone provided offers cell phone service with a contract that the customer must keep the service for a year, if the cell phone provider changes the rules in any way during that year then the customer must be allowed to terminate the contract any time after the change of rules. The provider is required to inform the customer of this option to terminate the contract as part of their on-line description of the rules.

Transparency is not the end. It is the beginning. Until we know what the rules are and how the rules are changing, we cannot have an intelligent discussion about whether the FCC can restrict what the rules should be. While I understand that the increasing need for bandwidth needs to be dealt with, we must require transparency and encourage consistency.